

Drawing Amendments:

The attached sheets of formal drawings replace the informal drawings filed on August 25, 2003.

REMARKS

This reply is in response to the Office Action mailed on April 18, 2006 in which claims 1-4 were pending. With this response, formal drawings are provided, claim 1 is amended, and new claims 5-20 are added. In light of the amendments to the claims and in view of the arguments presented below, Applicants respectfully request reconsideration of the rejections and a notice of allowance for all of the pending claims.

With respect to the drawings, the Office Action included a requirement for formal drawings to replace the informal drawings that were filed with the application on August 25, 2003. With this response, a set of formal drawings is provided.

Applicants traverse with amendment the rejection of claim 1 under 35 U.S.C. §102(e) over U.S. Patent No. 6,724,890 (“Bareis”) at page 2, paragraph 4 of the Office Action. Bareis fails to disclose or suggest an XDSL system that includes an impedance matching circuit including a fixed impedance having a compromise impedance providing a substantial impedance match to a plurality of common impedance characteristics of copper transmission lines where the impedance matching circuit provides the substantial impedance match without testing different impedances, as recited by claim 1.

Applicants note that the disclosure of Bareis is directed to an xDSL modem that performs impedance matching to termination impedances. *See* Bareis, Col. 7, lines 51-53. Bareis discloses a central office modem 100 and a customer premises modem 200, both of which are adapted to adjust their respective impedance matching networks 124, 126, 224, and 226 to “optimize the termination impedance[s].” *See* Bareis, col. 6, line 13-col. 7, line 59 (emphasis added). Bareis teaches away from claim 1 of the present application by disclosing that conventional use of fixed impedance matches in a transmitter interface and/or receiver interface provides only a compromise matching impedance, which results in “a significant amount of loss of various portions of the frequency spectrum of the signal when traversing long distances over a transmission line.” *See* Bareis, col. 1, lines 49-56. Moreover, Bareis discloses that “it is not typically possible to effectively match the transmission line using a fixed termination impedance network.” *See* Bareis, col. 4, lines 33-37. Thus, Bareis discloses a variable impedance matching

network that is “continually optimized to match the impedance of the transmission line” using a device to assess the signal transmission efficiency and to dynamically adjust the termination impedance. *See Bareis*, col. 4, lines 46-57.

Bareis discloses that the modem devices 100 and 200 perform an initialization where the devices set their respective impedance networks to “compromise” values and establish a communications link on an operational portion of the frequency spectrum. *See Bareis*, col. 6, lines 36-42. During operation, the central office modem transmits a set of signals covering a spectrum or a plurality of frequency ranges to the customer premises modem, which analyzes the transmission line performance and calculates appropriate impedance values for the adaptive impedance network. *See Bareis*, col. 6, line 47 – col. 7, line 18.

In contrast to Bareis, claim 1 recites that the impedance matching circuit provides the substantial impedance match without testing different impedances. Bareis fails to disclose or suggest that an impedance matching circuit that provides substantial impedance match without testing different impedances, as recited by claim 1. Accordingly, Bareis fails to disclose or suggest at least one element of claim 1. Therefore, the rejection of claim 1 should be withdrawn.

Claims 2-4 depend from allowable independent claim 1. Thus, Bareis fails to disclose or suggest at least one element of each of the dependent claims 2-4, at least by virtue of their dependency from allowable claim 1.

Applicants traverse the rejection of claim 2 under 35 U.S.C. §102(e) or, in the alternative, under 35 U.S.C. §103(a) over Bareis at page 3, paragraph 6 of the Office Action. The Office Action states:

Bareis does not disclose the exact circuitry of the compromise impedance circuit, but does teach adjustment and continued optimization to counter environmental effects on the transmission line.

Office Action, p. 3, paragraph 6.

Applicants note that the adjustment and continued optimization of Bareis is distinct from the impedance matching circuit including a fixed impedance having a compromise impedance providing a substantial impedance match to a plurality of common impedance characteristics of

copper transmission lines where the impedance matching circuit provides the substantial impedance match without testing different impedances, as recited by claim 1.

Bareis discloses that a fixed impedance cannot “effectively match” a transmission line impedance. *See Bareis*, col. 4, lines 34-37. Accordingly, the adjustment and continued optimization of Bareis teaches away from the “fixed impedance having a compromise impedance providing a substantial impedance match, as recited by claim 1. Accordingly, Bareis fails to disclose or suggest at least one element of claim 1. Therefore, Bareis fails to disclose or suggest at least one element of claim 2, at least by virtue of its dependency from claim 1.

Moreover, claim 2 recites the compromise impedance circuit comprises a resistance of approximately 620 ohms in parallel with a series combination of a resistor of approximately 680 ohms and a capacitor of about 2200 picofarads. The Office Action asserts that the circuit arrangement of claim 2 is merely a matter of design choice. Applicants disagree. The application at paragraph 0028 states that the particular arrangement represents a combination of characteristics of other line impedance values described in paragraphs 0025-0027. Accordingly, the particular combination represents compromise circuit values selected based on their relationship to line impedances associated with common transmission line impedances, which is more than a mere design consideration. The particular arrangement of claim 2 provides a substantial match to the transmission line impedance without testing different impedances. Accordingly, not only does the Bareis reference fail to disclose the particular arrangement of features of claim 2 (as acknowledged at page 3, paragraph 6 of the Office Action), but the particular arrangement of claim 2 would not have been obvious and would not have been merely a matter of design choice to a worker skilled in the art, since the values recited by claim 2 represent a compromise combination of particular line impedance matches. Accordingly, the rejection of claim 2 is improper and should be withdrawn.

Applicants traverse the rejection of claim 3 and 4 under 35 U.S.C. §103(a) over Bareis in view of U.S. Patent No. 6,542,604 (“Blon”) at page 3, paragraph 7 of the Office Action. The Office Action acknowledges that Bareis fails to disclose that the compromise impedance has an impedance value that is approximately equal to a characteristic line impedance of a transmission line without a bridge tap. *See Office Action*, p. 4, paragraph 7.

Neither Bareis nor Blon suggest a motivation to make the asserted combination. Bareis is directed to an adaptive transmission line impedance matching device (*see Bareis*, Title and Abstract), while Blon is directed to a scaled impedance replica for echo attenuation (*See Blon*, title and abstract). Blon discloses a plurality of replicas to represent, for example, a terminating resistance, a transformer, a transmission line, a bridged tap, and so on. *See Blon*, Abstract. Blon discloses that the various replicas are variable and may be set by software. *See Blon*, Abstract. However, neither Bareis nor Blon provide a motivation to make the asserted combination. In particular, there exists no motivation to modify the adaptive transmission line impedance matching system of Bareis to include the various replicas of Blon. The only motivation is provided by the disclosure of the present application. The asserted combination of Bareis and Blon constitutes an impermissible hindsight reconstruction based on the present disclosure. Therefore, the rejection of claims 3 and 4 over the asserted combination of Bareis and Blon is improper and should be withdrawn.

Moreover, even if the combination were made, the asserted combination of Bareis and Blon fails to disclose or suggest a disclose or suggest an XDSL system that includes an impedance matching circuit including a fixed impedance having a compromise impedance providing a substantial impedance match to a plurality of common impedance characteristics of copper transmission lines where the impedance matching circuit provides the substantial impedance match without testing different impedances, as recited by claim 1. Bareis provides an adjustable impedance matching network, and Blon provides adjustable replicas. The asserted combination of Bareis and Blon fails to disclose a disclose or suggest an XDSL system that includes an impedance matching circuit including a fixed impedance having a compromise impedance, as recited by claim 1. Accordingly, the rejection of claims 3 and 4 is improper and should be withdrawn.

With this response, new claims 5-20 are added. Independent claim 5 recites an impedance matching circuit that includes a first fixed impedance having a first compromise value and a second fixed impedance including a second compromise value, where at least one of the first compromise value and the second compromise value includes an impedance value that relates to a combination of characteristics of transmission lines with and without bridge taps. None of the cited references, alone or in combination, disclose or suggest the specific

combination of elements of claim 5. The subject matter of claim 5 relates to Figure 5 and the associated discussion at paragraphs 29 and 30 of the application. No new matter is added.

Independent claim 13 recites a method that includes applying an impedance matching circuit to a transmission line, where the impedance matching circuit provides the compromise impedance match without testing different impedances. None of the cited references, alone or in combination, disclose or suggest the specific combination of elements of claim 13. The subject matter of claim 13 relates to Figure 5 and the associated discussion at paragraphs 29 and 30 of the application. No new matter is added.

Claims 6-12 and 14-20 depend from claims 5 and 13, respectively. The text of claims 6-12 and 14-20 is taken from the application, for example, at paragraphs 29 and 30. No new matter is added. Since none of the cited references, alone or in combination, disclose or suggest all of the elements of the independent claims 5 and 13, claims 6-12 and 14-20 are allowable over the cited art, at least by virtue of their dependency from allowable claim 1.

CONCLUSION

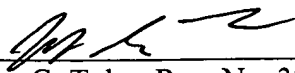
Applicant has pointed out specific features of the claims not disclosed, suggested or rendered obvious by the references applied in the Office Action. Accordingly, Applicant respectfully requests reconsideration and withdrawal of each of the objections and rejections, as well as an indication of allowability of each of the claims now pending.

If, for any reason, the Office is unable to allow the Application on the next Office Action, and believes a telephone interview would be helpful, the Examiner is respectfully requested to contact the undersigned attorney or agent.

Applicant(s) does not believe that any additional fees are due, but if the Commissioner believes additional fees are due, the Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-2469.

Respectfully submitted,

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Date


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